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ABSTRACT

The speakers at this centennial symposium addressed a wide range of issues pertaining to how the world of the year 2000 is likely to look, given current socioeconomic and technological trends, and how the secondary schools will respond to these changes. A brief welcome and introduction by the moderator, Christopher Berrisford (headmaster of The Harvard School of Los Angeles, California) is followed by the first set of conference papers, grouped under the heading, "Dimensions of the World of 2000." These include the following: "Business and the Economy in the Year 2000," by L. Stanton Williams, chairman and chief executive officer of PPG Industries, Inc.; "Science and Technology in the Lives of the Coming Generation: The Year 2000 and Beyond," by John Patrick Crecine, senior vice president for academic affairs at Carnegie Mellon University; and "The Future of Human Services," by Caroline Bird, author, lecturer, and economist. A transcript of a discussion period follows. The second set of papers, grouped under the heading, "How Secondary Schools Will Respond," includes the following: "Educational Reform: The Next Decade," by Denis P. Doyle, director of education policy studies at the American Enterprise Institute; "The Public Schools' Response to the Challenge of the Year 2000," by Richard C. Wallace, superintendent of Pittsburgh Public Schools; and "The Response of Private Education," by Gardner P. Dunnan, president of The Dalton School. The discussion following these papers is also provided. (TE)

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DIMENSIONS OF THE WORLD OF 2000: HOW THE SECONDARY SCHOOLS WILL RESPOND

The Shady Side Academy
Centennial Symposium
October 28, 1983

EA 019 908

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SHADY SIDE ACADEMY
CENTENNIAL SYMPOSIUM
FRIDAY, OCTOBER 28, 1983

Introduction by the Moderator — Christopher Berrisford
Headmaster, The Harvard School

DIMENSIONS OF THE WORLD OF 2000

Business and the Economy in the Year 2000 — L. Stanton Williams
Chairman and Chief Executive Officer
PPG Industries, Inc.

Science and Technology in the Lives of the Coming Generation: The Year 2000 and Beyond — John Patrick Crecine
Senior Vice President for Academic Affairs
Carnegie-Mellon University

The Future of Human Services — Caroline Bird
Author, lecturer, economist

Discussion Period

HOW THE SECONDARY SCHOOLS WILL RESPOND

Education Reform: The Next Decade — Denis P. Doyle
Director, Education Policy Studies
American Enterprise Institute

The Public Schools' Response to the Challenge of the Year 2000 — Richard C. Wallace
Superintendent
Pittsburgh Public Schools

The Response of Private Education — Gardner P. Dunnan
President, The Dalton School

Discussion Period

SYMPOSIUM PARTICIPANTS

Christopher Berrisford was born in England and was educated at Sherborne. While a student there, he completed the first course of study for a medical degree at Cambridge. Before entering college, he served two years in the Royal Artillery. He then won a County Scholarship to Queen's College, Oxford, where he studied modern history. He received an M.A. from Oxford and, after coming to the United States, an M.Ed. from Harvard.

Mr. Berrisford was Headmaster at the St. Mark's School in Dallas from 1963 to 1969, where he had previously served as a history teacher and then as Assistant Headmaster, Dean of Students, and Head of the Upper School. He has been Headmaster of The Harvard School in Los Angeles since 1969.

L. Stanton Williams has been Chairman of the Board of Directors and Chief Executive Officer of PPG Industries, Inc., since 1979. He joined PPG in 1946 and, after several accounting assignments, was named Vice President for Finance in 1963. He served as Executive Vice President for Administration and Vice Chairman before assuming his present position. He currently serves as a director or trustee of numerous corporations, civic organizations, and educational institutions. He is President of the Executive Committee of the Allegheny Conference on Community Development and National Chairman of the YMCA.

Born in Honolulu, Mr. Williams attended Phillips Andover Academy and graduated with a B.A. from Amherst. He then received an M.B.A. from the Harvard Graduate School of Business Administration. He also served as a U.S. Naval Officer for three years during World War II.

John Patrick Crecine was born in Detroit and graduated from Carnegie-Mellon University in 1961 with a B.S. in Industrial Management. After studying at Stanford University, he received an M.S. and a Ph.D. in Industrial Administration from C.M.U.

His work as a professor and an economic consultant included a term as a Fellow at the Center for Advanced Study in the Behavioral Sciences. In 1976, he returned to C.M.U. as a Professor of Political Economy. He then served as Dean of the College of Humanities and Social Sciences, and in 1981-82 was a Fellow Commoner and Visiting Scholar at Cambridge University. In 1983, he became C.M.U.'s Senior Vice President for Academic Affairs.

Dr. Crecine serves on several editorial boards, and his involvement with national committees currently includes membership in the Advisory Council for the International Security Studies Program of the Smithsonian Institution and chairmanship of the Governing Board of the Interuniversity Consortium for Academic Computing.

Caroline Bird is a New Yorker by birth. She attended Vassar College and received a B.A. from the University of Toledo and an M.A. from the University of Wisconsin.

She began her career as a writer and editor for the McGraw-Hill Book Company and continued as an editor and researcher for *Newsweek*, *The New York Journal of Commerce*, and *Fortune*. While associated with Dudley-Anderson-Yutzy, a New York City public relations firm, she began work on *The Invisible Scar* (1966), a socioeconomic study of the Great Depression. As a result of her research for that book and for a *Saturday Evening Post* article about discrimination against women in business, she wrote *Born Female: The High Cost of Keeping Women Down* (1968). It was followed by *The Crowding Syndrome: Learning to Live with Too Much and Too Many* (1972); *Everything a Woman Needs to Know to Get Paid What She's Worth* (1973); *The Case Against College* (1975); and *The Two-Paycheck Marriage: What Wives at Work Are Doing to America* (1979). She is also the author of other books and magazine articles. *The Good Years: Your Life in the 21st Century* was published last year.

Ms. Bird is a member or director of several organizations, including the Women's Equity Action League, the National Organization for Women, the American Sociological Association, and the American Society of Journalists and Authors.

Denis P. Doyle is currently a Resident Fellow in Education and Director of Education Policy Studies at the American Enterprise Institute for Public Policy Research in Washington, D.C. He has been a Federal Executive Fellow at the Brookings Institution and has been deeply involved with education policy at the federal and state levels. He was Director of Planning and Program Coordination for the Office of the Assistant Secretary, Office of Research and Improvement, U.S. Department of Education, and Assistant Director, Education Finance at the National Institute of Education. Before that he worked for the California State Legislature and was the principal architect of the state's teacher licensing system, the Ryan Act.

Mr. Doyle received both an A.B. and an M.A. in political theory from the University of California at Berkeley. He has studied private elementary and secondary schools extensively, and he has served as a consultant to the Ford Foundation, the Institute for Educational Leadership, *The Public Interest*, the Organization for Social and Technological Innovation, and the Academy for Educational Development. He is a member of the Board of Directors of the Sequoia Institute and a member of the Advisory Board of the Institute for Educational Finance and Governance of Stanford University.

Richard C. Wallace, Jr. has been Superintendent of the Pittsburgh Public Schools since 1980. He was a teacher and principal in several New England schools before becoming Director of Elementary and Middle Schools in Holliston, Massachusetts, in 1966. That appointment was followed by terms as Assistant Director and then Director of the Eastern Regional Institute for Education in Syracuse; Deputy Director of the Research and Development Center for Teaching, the University of Texas, Austin; and Superintendent of Schools in Fitchburg, Massachusetts.

Dr. Wallace received a B.A. in Education from Gorham (Maine) State College. At Boston College, he earned an Ed.M., Administration, and an Ed.D., Curriculum/Administration. He pursued post-doctoral studies at Harvard and Stanford. He is currently a member or board member of many educational and civic organizations at the local, state, and national levels.

Gardner P. Dunnan attended public schools in Meadville, Pennsylvania, and then graduated from Harvard College with a B.S. in biology. He went on to receive an M.A.T. in the teaching of science from Boston University, and a D.Ed. in Educational Administration from Harvard.

He taught at the Fay School for Boys and Lexington High School, both in Massachusetts, before becoming Assistant to the Superintendent of the Shaker Heights Schools in Ohio. He was Superintendent of Schools in Briarcliff Manor, New York, until his appointment as President of the Dalton School, New York City, in 1975.

Dr. Dunnan is Adjunct Professor at Teachers College, Columbia University. He also serves on the boards of several independent schools and educational commissions.

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Introduction

Christopher Berrisford
Headmaster, The Harvard School

I am delighted to be here. It's always nice for a Headmaster to go on to another school campus and know that, for once in his life, he's not responsible for everything that goes wrong, whenever it goes wrong. And it's a particular honor for me to be here on an occasion like this. Distinguished schools only celebrate 100th birthdays infrequently, and when they do, it calls for great celebration. Typical of this institution and the foresight that its leaders have shown in the past, you do not sit back and compliment yourselves on what has happened, but you look forward to what the future of the school will be. Having been on this campus for only a matter of hours, I can say from every impression I have picked up that the future of Shady Side is indeed propitious.

A hundred years is a long period of time. I remember when my boys' boarding school in England celebrated its 500th anniversary, and it did so with typical English flamboyance — it gave the first ever dance to which the girls from the local girls' school were invited. Things have moved a lot faster over here, and they're continuing to do so.

This Symposium is particularly appropiate in today's world when, as you know, there is national concern about the state of education, and that national concern has given birth to a

flurry of education reports. I imagine there is somebody around who has read all of them. One gets the feeling as one opens the next one that one has read it before. There's a certain repetitiousness about what is being said. That may blunt the importance of the message, which is that, for whatever reason, schools in general are no longer doing what the public would like them to do, or what in our more ideal moments we would have expected them to do. A book came out just recently called *The Troubled Crusade*, written by Diane Ravitch, tracing the history of education in this country from 1945-1980. For those of us who have been involved with schools during a large part of that time, it makes sobering reading, as we go back and look upon some of our ideals and aspirations and expectations. They now appear to have been ill-conceived, over-ambitious, inappropriate. Nonetheless, she paints a picture of a nation of people who care enormously about what happens to their future. Although perhaps the practical outcome of some of the things that we have been trying over the past many years has not been as effective as we should like it to have been, and although our hopes may have been inappropriate, nonetheless, the fact that we care so much and have looked to our schools for leadership, for help, for whatever they can do to correct the evils of society — that fact shows a faith and a confidence in the education process and represents a national ideal which is, to me, wonderful.

There have been changes over the last 20 years. Perhaps as we criticize ourselves now, we don't give ourselves enough credit for them. I went to Texas in the late 1950's for the first time as a history teacher right out of college, and I'm just on my way back to Texas for the first time in 14 years to take a look at what has happened there since then. I have friends who are there and I know from what I read and from what I observe of the public life of that state that the change in people's attitudes towards one another has been truly astonishing. The increase of tolerance and humanity that has permeated our public life is admirable, and I believe it to be the result of countless people in various ways realizing that some previous attitudes are not as acceptable as they once were thought to be, that the structure of society is not necessarily unbending.

The other day I picked up a book that has just been published which I think will have fascinating interconnections to what Caroline Bird might be saying later on. It is a book called *Parallel*

Lives by Phyllis Rose, and it deals with the married lives of five famous Victorian couples: Thomas Carlysle, Charles Dickens, John Stuart Mill, and others. The author points out what a change has taken place not just in the nature of marriage itself but in the attitude with which women enter into marriage. That's only 100 years ago. So attitudes *do* change, and one of the purposes of this session today is to stop and think about how attitudes are going to be changing in the next twenty years and what we can do now to help shape the attitudes of our young people.

Lots of other things are happening, and you will hear about some of them. I have been impressed just in the last few days to hear the editor of the present current collected works of Lord Byron, who is a faculty member of a distinguished university in California, telling a group of my students that the word processor has completely revolutionized the business of literary editing. In fact, he talked about the fact that, just in practical terms, making an index for a complex work used to take months and months of time. The last volume that he had to index took an hour and a half as a result of being able to use a word processor.

The University of Chicago and its Lab School have long had an interest in the teaching of mathematics. The work that they are now doing in mathematics classes for secondary school students involves the use of the computer not just as a device but as part and parcel of the process of teaching the subject. They admit at this point that they have no idea yet what difference it will make, but we're right on the edge of seeing similar experiments that may significantly affect how we teach.

In another context, it's been conventional for those of us in the private school world to disdain the use of videotape recordings of other people's lectures. It was interesting to hear that a professor of electrical engineering at Stanford University had recently discussed the use of interrupted videotapes of lectures. After ten years, he is absolutely satisfied with the evidence that interactive videotapes — videotapes that you can play and then stop whenever anybody has a question so that the group can discuss it — now produce measurably better results than the conventional methods. We have resisted that sense in our private school world, but perhaps the time has come when we have to consider techniques which use current technology in a creative and imaginative fashion. It's not either/or; it's both/and.

Before I get down to the business of the day, I'll give you my two great concerns about current discussion on education. First of all, we ask too much of our schools. There is a problem, and we turn to our schools and say, "Please do something about it." Our young people don't behave as we want them to, so we ask for more counseling, some kind of additional burden, without ever stopping to ask what the price is. The price is usually that other types of learning that we have valued go out the window. The second problem in education is that we look far too much to our expectations and not nearly enough to the actual results. Somehow or another, we have a sense that if our hopes are high and our ideals reach far enough, then sooner or later we will reach that objective. And we need to be honest with ourselves and say that whatever we hope to achieve, there are still some things that schools cannot do, nor should they strive to do. We should concentrate on doing what we *can* do as well as we can, and that clearly is what Shady Side has done over the years and intends to do in future.

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Business and the Economy in the Year 2000

L. Stanton Williams
Chairman and Chief Executive Officer
PPG Industries, Inc.

Forecasting what the world will be like in the year 2000 is a challenge fraught with difficulty. But, nonetheless, we are well-supplied with scholars and writers who have tried to help us. Indeed, the word "futurist" has become a part of the language. Perhaps it is because we *expect* the future to be so different from the present and the past that we meet at seminars like this one, and there is a thriving market for books, articles and institutes that attempt to define the future.

One thing that can be said about the future with certainty is that change will accelerate at a rate faster than we already have experienced, and the ability of humans to accept change will, in large part, be determined by how well people are prepared to deal with it. In his new book, *Previews and Premises*, one of those futurists, Alvin Toffler, attempts to come to grips with the great rush of seemingly unrelated changes facing society. He writes as follows:

> It's the computer — but it's not *just* the computer. It's the biological revolution — but it's not *just* the biological revolution. It's the shift in energy forms. It's the new geopolitical balance in the world. It's the revolt against patriarchy. It's credit cards plus video games plus stereo plus Walkman units. It's localism plus globalism. It's smart typewriters and information workers and electronic banking. It's the push for decentralization. At one

end, it's the space shuttle, and at the other, it's the search for individual identity. It's flex-time and robots and the rising militancy of black and brown and yellow people on the planet. It's the combined impact of all these forces converging on and shattering our traditional industrial way of life. Above all, it's the acceleration of change, itself, which marks our moment in history.

The late Herman Kahn, who was the director of the Hudson Institute, provides us with some historical perspective. In Kahn's view, we are in the middle of a crucial 400-year period — a long time in relation to our lives, but a mere blink in terms of human history. Just over 200 years ago, when our country was founded, nearly everywhere human beings were comparatively few, poor, and at the mercy of the forces of nature. Two hundred years from now, in Kahn's view, it is likely that almost everywhere people will be numerous, rich, and in control of nature. Although I find it hard to be quite as optimistic as Kahn with regard to the general human condition 200 years from now, it is difficult to dispute his contention that the 400-year span of history he selected will be as dramatic and important in the story of the human race as was the 10,000-year period that preceded it. The first half of that 200 years saw an agricultural revolution spread around the world, the Industrial Revolution mature, and the speed of getting from one place to another increase from the gait of a fast horse to multiples of the speed of sound. Now, at the midway mark of that 400-year period, we have seen the evolution of super-industrial economies in the most advanced countries where producing the necessities of life has become relatively easy because of technological advances and economic development. Significantly, most of that progress has been the result of that special quality of the human spirit known as individual initiative.

Here in the United States, we are undergoing the second economic revolution of the 20th century. In terms of where people work, the U.S. passed from an agricultural economy into an industrial economy early in this century when improvements in productivity enabled us to produce far more food with fewer people. The second revolution, in which mental work is replacing manual labor, is now upon us, and we are undergoing the strains that even such a bloodless revolution is bound to bring. Consider that of the 19 million new jobs created in the 1970's — more than at any other time in our history — only five percent were in manufacturing. We are

rapidly working ourselves out of the manufacturing business and into the distribution and thinking businesses.

Inevitably, as manufacturing is being transformed by automation and the new electronic information-processing technology, the importance of having a large labor pool to produce commodity materials is diminishing. This kind of change occurs from time to time in human history. In the short term, it causes problems, as it did when weaving machines replaced hand operated looms in Great Britain in the 18th century. But, over time, it stimulates creativity and innovation, washing away the obsolete and inefficient, while contributing to human advancement. It is the task of reasoning, rational people to recognize these economic transformations and provide the leadership that exploits the opportunities that are inherent in change.

Certain phenomena are the driving agents of change in the present and near future. The first of these is demographics — profound changes in population patterns. The growth in world population has been declining for the past 20 years. However, despite generally slowing birthrates worldwide, projections indicate that between now and the year 2000, world population will increase to a little over six billion people. To put this in some perspective, this two-billion person increase is equivalent to the entire world population in 1945.

The distribution of world population also will change significantly. Since birthrates have slowed unevenly across the world, 90% of the additions to world population will occur in under-developed countries. And these are regions of the world where the social and political strains of prior population increases are already being felt. These regions offer growth opportunities for the future, but this is counter-balanced by a tremendous need for jobs as well as satisfaction of basic human needs — both of which are difficult to achieve.

Contrasting with the continued population growth in under-developed countries, the population growth in the United States, Canada, Europe and Japan slowed sharply about 20 years ago. In our country, for example, birthrates dropped to half of what they had been during the post-war "baby boom" period. Landon Jones, author of *Great Expectations*, a study of the effect of the baby boom, likens its effects to the "passage of a pig through a python." This group, now between the ages of roughly 23 and 37, created the rise and fall in demand for

schooling services as it passed through that phase of development. This group also created the large growth in the labor force during the decade of the 70's — the largest such growth we experienced in seven decades. Over the next 10 years, as this group matures, the average age of our population will rise from about 28 — where it's been for the past 50 years or so — to 38. Other changes will occur as the population "pig" passes through society's "python."

At the same time it will present a strong challenge to the nation to provide challenging job opportunities. This will be difficult, because it also suggests a slower overall growth in the economy as fewer people enter the work force. And for business firms, it means fewer first-time car buyers and a slower growth in people forming households and thus buying homes. The pattern of slower growth is being repeated in all the industrial countries in the free world. Too often, the response to these realities has been to deny them — to impose artificial conditions by government sanction. Paradoxically, at a time when governments should be stimulating efforts to adapt to profound changes in the world marketplace, measures tend to be adopted to restrict trade, discourage efficiency in the name of job protection, and impose crippling social benefit programs. Fortunately, both in the United States and in the United Kingdom, government leaders such as Reagan and Thatcher have been trying to move their respective economies in the direction of policies that reward efficiency, progress and individual initiative.

In addition to demographics, other factors will have a profound influence on the future. In the United States, for example, the current $200 billion federal deficit is a matter of grave concern, and could foreshadow worse to come. From 1975 to 1983, federal government revenues increased at a rate of 10% a year while government outlays increased at 12% a year. Continuation of this trend until the year 2000 would mean that federal deficits will reach $2.5 trillion. Unless the trend is reversed, we could be living with a very small private economy, and a big government dominating every aspect of our lives.

Energy also is critical to any preview of conditions in the year 2000. Energy prices will add to inflationary pressures during the next decade or so, but probably not to the extent felt during the last decade. The next two decades will mark the beginning of a transition to non-oil-based sources of energy. There is the

possibility of improved oil recovery techniques as well as increased substitution of alternate energy sources — gas, coal, synthetic liquid fuels, nuclear and, to some extent, solar. Unfortunately, the needed transition to the greatest source of low-cost energy, nuclear power, has been nearly brought to a halt by social and political pressures. Construction lag times are such that even if the muddled public perception of nuclear power were to change today, the impact of that source would be minimal, even by 2000. Society's reluctance to fully develop this source of limitless power is an example of beneficial technology that has developed faster than mankind's willingness to manage it.

Perhaps overeaching all the conditions that will impinge on our lives before we reach the next century is the transition from a national to a world economy. Everyone in business must deal with the fact that the world is rapidly becoming a single marketplace. Goods are being produced wherever they can be made to acceptable standards at the lowest possible cost, regardless of national boundaries. And the most efficient places for such mass production are coming to be Third World countries such as Taiwan and South Korea. As we have seen, this nation's dominance in autos and steel has been lost as developing nations have acquired the technology of efficient production and combined it with an eager and less costly work force.

However, many firms in this turbulent era have already discovered that with every set of social, political or economic circumstances there also is opportunity. Limited resources, for example — energy, potable water and strategic materials — will provide opportunities in the fields of water treatment, energy conservation, high-performance materials, as well as those areas I've just mentioned: solar energy, synthetic fuels, and oil and gas exploration.

The growth in world population will cause an increasing demand for food we are not now prepared to meet. Opportunities will occur for the development of genetic plant and animal technology and more efficient farming practices based on greater use of fertilizers, pesticides and herbicides.

The revolution in information gathering and computerization is well under way and will continue. Advanced technology will be translated into new methods of data processing, later generations of home electronics applications and information services. More and more of the latest electronic technology will be focused on increased industrial automation applications.

It was not long ago that "1984" was thought of principally in terms of a book by George Orwell that dealt with a world dominated by "Big Brother" and mind control. Fortunately for all of us, most of the nightmares Orwell envisioned in 1948 have not come to pass. But now, in chronological terms, 1984 is almost here. In fact, the year 2000 will be here in little more than 16 years. We are as close to that year as we are, in reverse time, to 1968 when President Nixon was first elected.

The central question before this Symposium is the response of American secondary education to dimensions of the year 2000. I hope that my remarks will have laid the basis for your own creative response. But allow me to draw a few conclusions of my own.

First: The tasks of educators are to prepare people who will be both leaders in business and leaders in the world. With the growth of technology and the coming together of the global community, issues of business, public policy and technology will become more and more entwined. That is not to say that government must dominate business and technology. It is to say that educated people must be prepared to cross political boundaries and participate in the policy making process in a constructive way.

Second: Any new definition of the liberally educated person will include computer literacy and a sufficient understanding of the sciences to understand the basis of the technologies which will both enrich and challenge the world of the year 2000.

Third: As change accelerates and technology determines the fortunes of nations and the world, speaking and writing skills will become even more prized, for without communication, how can the human species expect to interpret and understand the change that is taking place? Articulate speech and clear writing are essential components of a technological society.

Fourth: The vision of the world as a single marketplace creates an imperative for tomorrow's leaders to understand different cultures and varied peoples. For all of the speed of technical change, human customs and traditions persist for generations and frequently clash with the material world that closes in about them. An understanding of the varied nature of mankind and of human conditions is essential to growth and peace, and preparation for that kind of understanding is the responsibility — and obligation — of education.

As students of the humanities must understand technology, so must the scientist and technician understand the human condition. Technology presents mankind with the opportunity to manage its future. Obviously, various parts of society will demand a role in creating a consensus about national objectives and priorities. Educated people ought to forge that consensus. In doing so, they should have an understanding of politics and world economics. It cannot simply be an idealized or special interest vision of what the human condition in 2000 should be. It must be a consensus based on an understanding of humanity's potentials — and limitations. It must be a consensus based on a knowledge of the dynamics of human behavior played out on a worldwide stage.

In preparing my remarks today, I was reminded of a double-edged Chinese toast: "May you live in interesting times." Interesting they are, and difficult as well, but there is nothing in the future that we cannot deal with, if the past history of our country is any indication. As John Naisbitt put it so well in his book *Megatrends*: "Although the time between eras is uncertain, it is a great and yeasty time filled with opportunity. If we can learn to make uncertainty our friend, we can achieve much more than in stable eras."

I hope that this Symposium will make a contribution toward that end.

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Science and Technology in the Lives of the Coming Generation: The Year 2000 and Beyond

John Patrick Crecine
Senior Vice President for Academic Affairs
Carnegie-Mellon University

Predictions of the state of science and technology in the year 2000 and beyond are safe ones to make. The progress of science is only partly guided by what is there for discovery; it is equally guided by where man's imagination leads him to look. And we can gain a pretty fair glimpse of where man is likely to look by sampling current science fiction. To the extent that science fiction captures private dreams and the motivations of human creativity, the authors of today are likely to be as successful at glimpsing into the future as Jules Verne was nearly 100 years ago. Twenty years is not such a long time anyway. Prediction is a particularly easy task because it can be speculation, so long as it is plausible speculation. *Being plausible* is easy, too, if only because the study of history demonstrates rather clearly that the process of looking backward or forward 20 years from any given point in time is an exercise which emphasizes the continuity in human affairs, not the discontinuities. Life in the year 2000 will reflect themes already well-established in 1983.

Predictions concerning the role of science and technology in the lives of Shady Side Academy seniors — or anyone else, for that matter — are also reasonably straightforward. Many, if not most, of the things that will be directly accessible to the leaders of our society in the year 2000 can be found in some

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form in the research laboratories of today and in the cutting-edge scientific papers. Magazines like *Science*, *Scientific American*, *Discovery*, *Byte*, *Time*, and *Newsweek* provide nearly all the necessary baseline information for predictions and even some well-informed speculations of what the future holds.

Science and technology, for the most part, represent evolutionary processes that generally lead to incremental changes. It is the cumulative effect of many, many incremental changes that leads to the appearance of technological and scientific revolutions. Even when technological changes appear to be revolutionary, their *impact* on society is generally far less dramatic than one might expect. For example, in spite of the "revolution" in the relationships between superpowers brought about by the harnessing of atomic energy, the history of superpower geo-political relationships over the past 40 years could be written plausibly using only traditional balance-of-power concepts, and without major reference to the unique role of *atomic* or nuclear power in those relationships. (We are all enormously thankful for this fact!) Most of the field manuals of the Soviet and U.S. armies are but modest revisions of World War II manuals, rather than the radically different collections of doctrine one might expect as a result of radical changes in the presumed lethality of modern nuclear warfare. Similarly, the social history of Western society during the past 40 years could be written without much reference to nuclear power. Whether electricity is generated hydro-electrically in a coal-powered steam-generating plant or in a nuclear power facility is far less important than the fact that sources of energy have expanded to meet most of the needs of Western societies. This is not to say that there are no important details in the experience of man and society over the past 40 years directly attributable to nuclear energy — only that the claims of futurologists in 1950 about likely impacts of atomic energy on the world of 1983 would have been vastly overstated. The more conservative predictions based on the continuity of human affairs would end up closer to the mark.

So I will not take the most obvious approach to an essay about the future and fill this one with informed speculations about recombinant-DNA, clones, and the elimination of dread diseases. I will not speculate about technological solutions to world hunger and population problems, about ultimate solutions to energy problems, ever-smaller and less-certain fundamental elements of force and matter that will surely be

discovered during the next 20 years or so, or about replacement parts for the human body, or new modes of transportation, or exotic space travel, or new modes of warfare, or greater insights into the origin of the Universe and the geophysical properties of the Earth. Who knows? We might even be able to predict the weather with accuracy more than four hours in advance!

It is not because these developments are unlikely or unimportant — they are neither. Rather it is because they will be introduced into a society and into human organizations that change slowly and will cause new technology to adapt to the broad characteristics of the society, its practices, its organizations, and its institutions. Technological changes, for better or worse, are far more likely to adapt to the societal structure into which they are introduced, rather than the reverse. The activities of the individual parts of the human organizations and institutions may themselves change dramatically due to technological innovations, but the operation of the overall systems will not. The human part of the system will retain its dominance and will surely dampen any potential revolutionary effects.

On a societal level, I do not predict massive changes between now and when current Shady Side Academy seniors approach the peak of their careers. The things that were important for my generation in determining success and accomplishment in our society will still be important, because the best guess is that society and its institutions will not be radically different from what they are now. I realize this represents a perfectly valid sales pitch for the fundamental, liberal education Shady Side Academy has offered over the past 100 years, but that is another topic.

It would be unfair to suggest that there are not interesting and important things happening in the world of science and technology. The world of 1973 did not have video games (remember how exciting Pong was when it was first introduced, or how many people were addicted to PacMan two years ago?), did not have paper diapers with those very important elastic leg bands, or Cable TV with channels containing a variety of different sports (some X-rated), or talking automobiles, or widely available wireless telephones and microwave ovens. Our lives are clearly enriched, and we possess more "power" at the individual level. It is also clear that those who benefit most from applied science and technology are those who are educationally and economically well-endowed.

I would like to suggest two broad, general characteristics of the impact of science and technology over the next 20 years:

1) There will be several orders of magnitude more intellectual power at the disposal of the 1984 Class of Shady Side Academy than was available to the Class of 1964.

2) Society in the year 2000 will be more fragmented, less coherent, and more difficult to govern than it is now.

Both of these predictions have their origins in the information-processing revolution — the computer revolution — we are currently in the midst of.

Shortly after I graduated from high school (slightly more than 20 years ago), I had the opportunity to operate an IBM 650 computer. I had access to it between 2:00 and 4:00 a.m. on Sunday mornings. The computer filled an entire room, had vacuum tubes, received its input from punched cards, was programmable in something called SOAP, and punched out cards which were then fed through a printer. This behemoth of the early 1960's invariably grew tired at the end of the week and only stopped "dropping bits" when I would turn it off, let it rest for half an hour (cooling off), then reinstitute a 20-minute start-up procedure. The IBM 650 was the largest computer commercially available. It was exciting! To be the owner (for two hours a week) and operator of such a powerful piece of equipment was invigorating. It is hard to believe that it only had the computational power of a PacMan watch or a programmable calculator.

Those of you whose children have an Apple IIe have power and convenience that no one had in 1960. When a Macintosh 2500 is released by Apple in early 1984 — a 32-bit machine with high-resolution, user-friendly graphics for less than $2500 — many people will have access to the technology that less than five years ago was available to only a handful of the top computer scientists at Xerox's Palo Alto Research Center labs.

The personal computer which Carnegie-Mellon University is developing jointly with IBM for distribution to all students, faculty, and staff will have an operating system that promises to be better than the Apple Lisa, will have at least a million bytes of memory, and will be able to execute at least a million instructions per second. By 1986 the C.M.U. campus will have more computers networking together than telephones. As exciting as these hardware advances are, they are important only because they make possible real advances in software that can truly extend the human intellect.

It is already possible to see the direction that advances in information processing technology are taking. Researchers in artificial intelligence and cognitive psychology, working with experts in other fields, are creating "expert systems" — programs or systems that capture the expertise of professionals in a variety of areas. Just as a word processor with a spelling checker captures the expertise of a professional typist (armed with a good dictionary), researchers — many of them at C.M.U. — are creating programs that diagnose errors in grammar, syntax, and sentence construction. The next generation of "expert writing systems" will be diagramming arguments and checking logic, and differentiating style and usage by audience. Similar systems for aiding people in writing computer programs are being used in introductory programming courses today. Other expert systems which take the drudgery out of the design process by capturing high-level human expertise exist in architecture, music composition, art, electronic circuit design, and theatrical lighting, to name but a few.

Expert systems capture human expertise for improving the diagnostic power of human problem-solvers. Diagnostic capabilities for expository writing have already been mentioned. Medical diagnosis has already been partially automated in several areas and represents one of the first successful attempts to capture professional expertise in the form of computer software. Similarly, computer software which enhances professional diagnostic capabilities exists in law, psychiatry, and manufacturing.

For some time, expert systems have been available which help people to understand, simulate, and cope with complex systems involving the weather, chemical reactions, economics, administrative and political decision-making, and individual cognitive processes and reasoning tasks. The use of computer-based expertise has enhanced human capabilities in a variety of analytic tasks in areas as diverse as literature and history, statistics, and theorem-proving. The trends are clear, and the intellectual base exists for developing better, more capable expert systems, in more and more areas.

By providing wide access to usable, high-level human skills and knowledge in a variety of fields, researchers are putting a great deal of diverse intellectual power into the hands of many. This provides individuals with greater "power" and control over their environment and renders "mediocre expertise" obsolete (or at least easily replaceable.)

The "revolution" in information-processing technology has its dark side as well. As technological advances push down the costs of creating, processing, and distributing information, more information is produced, distributed, and available to individuals in both professional and personal contexts. In many ways society appears to be drowning in a sea of information. Individuals and institutions, faced with more information but with very real limits to their ability to absorb and process information, quite naturally adapt by becoming ever more selective about the information to which they will attend. Greater selectivity on the part of those "demanding" information leads to increasing selectivity and specialization on the "supply" side. Such processes lead, in the long run, *away* from the media as somewhat monolithic socializing mechanisms which help create a society with many shared values and beliefs, and *toward* a fragmented society with populations organized around special interests, catered to by specialized information and communications sources, attended to in increasingly selective ways.

Cable TV, with multiple channels targeted to specialized audiences — sports, rock music, culture, news, religion — illustrates well both the cause (cheaper technology for generating and distributing communications) and the effect (more heterogeneous communications). Consider the relative influence of the three major television networks in 1974 and 1984. The proliferation of special interest magazines in recent years also illustrates the phenomenon and the trends. Where media formerly helped bind society together by providing relatively homogeneous information, new forms of mass communication that provide more specialized information have set in motion forces which segment and fragment society.

Our ability to design complex information-processing systems is highly refined in the organization and architecture of a computing system. But it still is depressingly primitive when it comes to designing human organizations, domestic political institutions, and a better world order. That is our challenge — and that is our opportunity.

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The Future of Human Services

Caroline Bird
Author, lecturer, economist

Well, wouldn't you know? They've left it to a woman to sum up what all these great trends are going to mean in the daily lives of students here at Shady Side, who will be living most of their adult lives in the 21st century.

As Freud said, love and work are the basis of a satisfying personal life. Now everyone doesn't agree with me, but I believe that adults of the 21st century are going to have to cope — and I use the word "cope" advisedly — with unprecedented personal freedom in both these domains. Many people are frightened by the growing variety of acceptable lifestyles. But others are already using them to achieve a better balance between work and family life than was possible in the industrial society that we are leaving behind us. With a little bit of luck and appropriate public policies, that better balance may be available to a majority of Americans. In the past, all but a lucky or privileged few were forced to organize their daily lives around two responsibilities over which they had very little control: one was how to make a living, and the other was the arrival of babies.

Let's talk first about the coming freedom in work. There was complaint and foreboding 50 years ago when factory jobs pulled young people away from the farm to work for wages and live on

their own in the freedom of the cities. It was going to rot their morals, obviously. And there is complaint and foreboding of much the same type today about the prospect of turning the drudgery over to computers and industrial robots. We talk about whether there will be enough jobs to go around, as if we could think of no other way to distribute the goods the machines will produce. We will have a redistribution of power, which of course is what everybody is worried about. But what we really fear is what people will do when they aren't tied down to a job.

We face a liberation as massive as the Industrial Revolution. Peter Drucker, the economist, thinks that in the not-so-distant future, fewer than 10% of our workers will be able to turn out all the manufactured things we need, in spite of our seemingly endless capacity for gadgetry. Most of the repetitious physical work will be done by machines or exported to other countries, including many of the tasks that now glue workers — a majority of them women — to the screens of our present transitional computers. There will be less work and work of a different kind. The washing machine created more washing and a different kind of clothes, and contributed to the breakdown between blue-collar and white-collar workers. The information machines are already creating more data and a rising demand for people with the judgment to analyze and act on it in ways that can never be mechanized. That means that most Americans will spend their working lives using their heads instead of their fingers. There will be a growing demand for people capable of recognizing problems as well as solving them — which bodes well, I think, for the vocational future of students presently at Shady Side. IBM, the creator of the computer, was right in adopting its one-word slogan, "THINK" — the hardest work of all.

The work that machines leave behind will put more strain on the brain but also will be more fun. And it's a very curious thing that what workers say they want when you survey them reads like a blueprint for the work rules the new technology mandates. Ask people what they really want in a job, and they talk about "meaningful" work: the opportunity to use their talents, variety of duties, control over the hours and work rules, relief from nosy bosses, a say in decisions, the chance to try new work, a redistribution of the power of the workplace. And interestingly enough, people begin to want these things when it's possible to want them. It's all in the cards. Advances in information technology promise liberation from the shop,

the office, the time clock, the chain of command, and the fixed career ladder.

In the information economy ahead, working conditions for everyone will be modeled on those prevailing today in schools, colleges, laboratories, newspapers, book publishing, brokerage, law, and accounting firms, and other places where knowledge is passed around and processed. Learning and teaching, often in formal classrooms, are already the major part of what Army officers and IBM executives do all day long to earn their wages. The time may come when workers will spend more time learning how to do the job than they will spend in actually doing it. More people are going to be able to earn a freelance living — living like myself, as a matter of fact — doing short, self-contained projects separated by weeks and months of leisure.

Let's visualize together for a moment a world in which most people won't expect to spend most of their lives in 9-to-5 jobs. There will be no rush hours, because the work won't require that thousands get to the same place at the same time. Much of what we will come to call "work" will eventually be done in places that don't even look like workshops or offices. If you feel like a change of scene, you'll simply move your work to a different terminal — or throw the terminal in the back of the car and drive home if the kids are sick, for instance. And like the professional workers of today, the typical worker of the future will do some of her work at home — not to be confined at home but to do it when she feels like it. Some workplaces may look like vending machine canteens — just rows of terminals, with people drifting in and out. Others will look like hotel suites, set up for just the kind of interchange of view that is going on here today.

But liberation from the constraints of work is only half of the story. We'll have more choices at home as well. The rules of the traditional family were based on the assumption that babies were bundles from heaven that could descend at any time. That possibility severely limited the responsibility that women could take on a job outside the home and kept the noses of husbands to the grindstone, putting up with whatever the boss handed out for the sake of the wife and kids at home. The uncertainty of reproductive life exaggerated sex roles and forced both men and women to follow a rigid life track. Fathers had to abdicate a role in the lives of their little children in order to support them, and mothers a role in the work world in order to nurture them. But no longer. A majority of the mothers of school-age

children now work outside the home — surprisingly, over 40% of the mothers of pre-school children. Unplanned babies are no longer the rule, and while most young couples want children, most also say that children aren't necessary to a happy marriage or a happy life.

This new attitude toward children is probably the most important thing that has happened, and I think it grows out of the technology of birth control. Now that children are *really* optional, couples have them not because they can't help it, or because they think they ought to, but because they want to spend time with children. It is a conscious choice. They are starting families later, finishing them sooner, and having fewer. Most say they want two, but if present trends continue, the typical family of the future will consist of a mother, a father, and a deliberately wanted and cherished single child.

And children are not for women only! Men, too, are beginning to demand the option of choosing, without social penalty, whether and when to put their families ahead of their careers or their careers ahead of their families. In a recent survey, one-third of 1000 male undergraduates of Harvard and Vassar said they would prefer to work part-time while their children were pre-schoolers. These are *men*, not *women* — *men* want to spend time with their little children. I think that's extremely important. The children of the future are going to be reared by fathers and mothers who will find a way to spend more time with them. Day care isn't the answer if you're having children because you *like* children and want to be *with* children.

Let me close with two suggestions. If we're going to get to this better world, we're going to have to invest more resources in *people*. For the post-industrial information technology ahead, we need a massive investment in *human* capital. We don't need the bricks and mortar. We need to put the money into people. The wealth of our nation is not the gold in Fort Knox or the numbers flashed on the screens of Wall Street, but in the productivity of our people. If this sounds like Red propaganda, it's exactly what Adam Smith said over 200 years ago, but we seem to have forgotten it. Human capital is created by the work of parents, teachers, trainers, coaches, doctors, nurses, counselors, and protective government agencies. And the most valuable of these tasks is done by women who are underpaid or, in the case of mothers, simply not paid at all. We put this right out of the Gross National Product and say it's all a drag on the economy. We underfund parenting, health, and educa-

tion because we imagine that education and training benefit the individual instead of the nation. We spend less on education than on defense, and a smaller percentage of our GNP than the Japanese, whose well-trained work force is stealing our markets.

We're going to have to change our thinking. We're going to have to spend more on schooling, both in and out of the classroom. We're going to have to get used to retraining workers — if need be, at public expense, or at least by somebody willing to invest resources for a little bit longer than three to six months. And we're going to have to recognize parenting as valuable work and see that those who undertake it are adequately funded. Luckily, the demography and work rules ahead are going to make it easy to do this. Fifty years ago, the money young people *could* have earned if they worked was the biggest bar to sending all our children through high school and later to college. But we solved that. The same kind of bar to child-rearing now faces the professionally educated young couples who are going to be most urgently needed for the transition to the post-industrial economy.

I predict that we're going to solve the problem in the same way. David Reisman created the term "status of studentry" to describe the new stage of life institutionalized by universal high school and college — adults who were not earning in the marketplace but who were students. Perhaps what we need is to institutionalize a "status of parentry" — I mean the parentry of little children, pre-school children.

Like studentry, parentry would be an optional life stage that would often but not always follow chronologically after the status of studentry. We voted financial aid for colleges in the 1960's because we thought that the tax-payers had as much to gain by improving the education of the work force as the students themselves. Tax-payers will do the same for parentry when the population of native-born Americans begins to decline — as it already has, as a matter of fact, and as it will dramatically, I believe, in the 21st century. Then everyone will see that the need is for fewer people but better prepared, better cherished, better educated people.

I think that there are some public policy changes needed that will come about. We might start by recognizing parentry, if only symbolically, by an Act of Congress similar to the G.I. Bill of Rights or the Civil Rights Act of 1964. This law would proclaim a Parents' Bill of Rights, which would, in principle

at least, forbid employers to discriminate against parents who took time off to spend with a pre-school child. That's only to age five or six. The next step would adjust existing programs such as Social Security and the Internal Revenue code to divert resources to that end. Employers might have to organize some of their tasks into part-time jobs — jobs that could be shared by two, or jobs that could be done at home — for which parents of pre-school children would have first call.

Parents would have many options for the one or two children that they want to have. They could work it out between themselves depending on how they felt. They could both go part-time. They could take turns working and staying at home. When both wanted to work, they might be eligible for a Social Security benefit that would provide for really decent child care.

However we work it out, the information economy ahead is going to mean fewer but better prepared people and new assignments for the students and faculty here at Shady Side who will be involved in leading this transition.

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Discussion

Following the formal presentations, members of the audience were invited to address questions to one or all of the speakers.

QUESTION: Mr. Williams, do you think there will be more free trade or more protectionism in the years to come?

WILLIAMS: I think that the trend over the longer term is going to be toward more free trade. What we're seeing today is that the less-developed countries have a population willing to work for lower wages than people in the developed countries. And one of our problems is whether we of the developed countries are going to accept the fact that we have to allow production from the less developed countries to be exported to us, and then devote our attention to those things that we can do well. We're seeing in this country the reactions of people who are concerned about the loss of jobs, and rightfully so. But they're in the basic industries that today can better be done in other countries. So we've got to go through a transition and, in my view, a freeing up of some of the government restrictions so that our people will devote themselves to those things which they can do best as educated people, and let those in the less developed countries do what they can do best. So my judgment is that we're going to head toward free trade, but we're

going to have some stumbling while we try to protect jobs in the developed countries.

QUESTION: Ms. Bird, your picture of mothers and fathers electing to stay at home with their children assumes that both parents will be present. What about the high divorce rate? Are the parents going to be around to "invest" in their children?

BIRD: In the first place, I think that we're going to have more divorce. We already do. But we always did have marriages that went dead while people lived in the same house, so I don't share the concern about the rising divorce rate. As a matter of fact, it has not really been definitively shown that the divorce itself is what injures the children. I think that the natural parents will want to spend more time with their children, even though they don't want to spend more time with each other. So the issue of the care of children is not based on the two natural parents staying together. Marriages that are held together for the sake of the children don't necessarily do the children a lot of good. There are all kinds of ways of bringing up the kids, but they all have to be brought up by hand.

QUESTION: Mr. Williams, it sounds as if you have written off the basic industries of this country in favor of free trade. Can we as a nation afford to allow these industries to be moved off shore, in light of the problems of national defense?

WILLIAMS: That question is obviously a basic one which this country has to face. I happen to think that we don't have free trade today, and we'd do a much better job of saving industry in this country if we really *had* free trade. But Japan, as an example, is *not* practicing free trade. They have some restrictions and advantages which are artificially provided by the Japanese government. So I first want to emphasize the point that if we're going to have really free trade, we've got to lift some of the restrictions in other countries as well as in our own.

Now you're also raising the question about whether our steel industry should disappear because we need it for defense. We need a steel industry for defense, but I don't think we're approaching the question about how to save a steel industry in the right way to preserve it for defense. In the long run, our steel industry *will* become much less important than it is today, but we will always have to have a steel industry of some kind in this country.

QUESTION: Dr. Crecine, I'm concerned by the projection that more and more students will spend much of their classroom time sitting passively in front of a computer terminal screen. They're already spending their leisure time playing video games. What about the individual attention that we try to give as teachers? What about creativity and activity? How can these qualities be cultivated in the computer age?

CRECINE: I think beneath your remarks is the notion that "hackers" — students in front of a T.V. screen video game — are in danger of losing any spark of creativity they might have and their sense of individuality. These are clearly legitimate worries with some video games. But I think there's a far more insidious and significant problem embedded in your question.

First, let me point out some benefits of computers for young students in the "individuality" dimension. There is nothing that gives an adolescent more of a sense of power and a sense of "efficacy" — that's what a social scientist would call a sense of personal control over one's environment — than when he is in front of a video screen. In fact, the act of programming is the act of giving commands in sufficient detail so that the machine that's being controlled responds in predictable ways. That, I think, is all to the good. The art of programming is the art of getting a complex, powerful computer to do what you want it to do in the way that you want it to do it. There are many good things that come with that psychologically.

The problems with increased use of computing in education lie not so much in the active/passive dimension — I think in the programmer's case, the programmer is the *active* element, not the passive one. But when it comes to dealing with human organizations and human systems, an individual cannot have the same degree of control. In fact, one attractive feature of computing and computers is that they represent a domain where an individual can exist and control, encouraging some individuals to withdraw from those environments which they cannot control.

This is not an issue that cuts cleanly, either way. But I guess if I'm worried, it's not that students of today or the future are likely to be less active and have less initiative, but they're likely to be activists towards more controllable, predictable objects than I think perhaps is healthy for society. I don't have any great ideas about what to do about this, though.

BERRISFORD: I've heard those comments made in one form or another from time to time. I must say, my observation of young people using computers is that, although there is a certain amount of passivity in some, once they're given even a modicum of direction and some issues to explore, then the fascination of the device takes over — whether just because it's a new device or whether it's inherent in the system — and there's *more* exploration, *more* thinking through of issues than there has been before rather than less. I'm reasonably encouraged on that score.

QUESTION: Ms. Bird, you seem very optimistic about the future when all adults are going to have satisfying jobs and children they love and can care for. Yet we see a situation here in Pittsburgh where the children of unemployed blue-collar workers are going to have to settle for much less — much less income and much more confinement in terms of the jobs they can expect to pursue. Judging from the current dismal scene, how can you *really* believe that in the future, everyone will have the wonderful job situation, income, and leisure you have described?

BIRD: You've discovered that I'm a revolutionary, haven't you? And I guess I've now got to face up to it. Yes, I think that the long-term historical trend has been toward an increase in the proportion of the economy that's in the public sector. We have had an increasing reallocation of income from the rich to the poor, or rather we've had a rising floor. I know that it doesn't sound this way when you read *The Wall Street Journal*, and that most people in this room don't think that it's going to happen, but I predict that the sheer technology of the situation will mean that we will have to reallocate.

The devices that we adopt to effect this will be face-saving, because you know we don't *believe* in reallocating income. We have a vision of an economy in which people will work for what they earn, that somehow or other they will be paid what they are worth, and that there will be a job for everybody. The idea is to *create work*. Well, creating work does not seem to be an end in itself. It's only an end when you can think of no other way to distribute the output. But somehow or other, sanity usually prevails, and when we have plenty running out of our ears, we find ways to make it available to people who probably haven't earned it. I don't think that I earn my keep, and I don't think that almost any of us in this room actually is paid in claims

against society on a basis that could be rationalized by what we contribute to it. And yet that assumption is central to all of our economic thinking.

I think that we're going to *muddle through*, in some way or other. I think that the public sector will grow. Much as everyone deplores all the waste, fraud, and abuse of the Department of Health, Education, and Welfare, and the creation of human capital, you know, we're not *absolutely* insane. And so, we will have more of the good things in this kind of technology, and they will have to come from the public sector. Now, I'm going to take a plane at 3:15, so you only have to bear with me for a couple hours more, but that's what I *really* believe!

BERRISFORD: I have an extension of that concern, and I would like your reaction to it. It is this: as talented women move into high-paying positions in very many areas of our society, particularly in the professional world, those women are, to a large extent, meeting and marrying or living with equally talented men. Therefore, they are combining two very substantial incomes, which used to be shared between two families. It's not the fact that a man and a woman now have those incomes, as opposed to two men having them in the past, that is significant. It is that one family unit now commands the income which used to be spread between *two* family units, each with two men and two women. So are we not in danger, as a result of promoting talent in this way, of creating a meritocracy which will be self-perpetuating because the children of that union will themselves be talented and affluent and go on to do exactly the same thing in the next generation? It will create a meritocracy which is almost unbreakable.

BIRD: I think that the great danger we face is that a few people are going to do all the work, and that simply means that the wealth they produce is going to have to be given away. There's no other way around it. And then we're going to have fewer people, because we don't *need* people. We needed a lot of people when we had to cut down the trees in this country by hand. We don't need the people anymore, and the production of people, too, responds in some ways to the laws of supply and demand.

BERRISFORD: My plane goes a little earlier than yours. Would you like to join me? I think we'll leave the question of how we reduce the number of people to the next session!

QUESTION: I would like to hear what Mr. Williams and Dr. Crecine think about Ms. Bird's projections regarding increased government involvement in the home and the work place.

CRECINE: I think the question partly involves, "What is the role of government in society? Should it expand and pay *more* attention to social problems, education, and parenting — through regulatory processes or Bills of Rights or tax legislation or direct provision of human services — or *less*?" And I think the answer to that has very little to do with how much you value educated children or education or the quality of human interactions or whatever. I think it depends crucially, however, on how much confidence you have in the government's ability to effect new social values — to deliver results in social areas. I think there are a lot of people today — and I would count myself among them — who care very deeply about the range of problems that government has traditionally tried to solve. I am very pessimistic about the ability of government and government programs to make much of a dent on a wide range of social problems. In fact, history suggests we're in the "alchemist" phase in government social programs, where we're probably doing as much harm as good, and maybe more. We need to know a lot more about the processes that produce the social outcomes we are trying to effect before we continue, willy-nilly, trying to tinker with those processes with unpredictable results.

BIRD: May I ask a question: Who's going to do it? Who's going to create the human capital or put up the money — I mean for the long-term? It takes a long time to produce people. Somebody has to fund it.

CRECINE: I think it takes even longer to produce the knowledge that makes the investment a sensible one, and we just don't have that knowledge now.

BIRD: Do you think that if we don't do anything, and leave the present division of public and private and study the problem, that we will eventually come up with solutions?

CRECINE: It's hard to say! It seems to me that the history of the '60's and the '70's is the history of well-intentioned ignorance that really has *not* produced the kinds of outcomes that I think most of us desire.

WILLIAMS: I'd just like to say that I'm very much in the same camp with Pat Crecine, and feel that we've got to encourage individual initiative and private initiative in society. I'm very wary of well-intentioned government providing all our answers. Today, we have a very large government influence on our lives. Government represents 25% of the Gross National Product, and it's growing very fast. But I don't feel that that has contributed much to where we are today.

BERRISFORD: I think that it's particularly serendipitous that at the moment that the panel reaches some measure of disagreement, the clock says it's time for the coffee break.

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Education Reform: The Next Decade

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Thank you for the warm welcome. I think a more revealing introduction would be the colloquy between my mother and me when I got my job at the American Enterprise Institute. She said, "Tell me: what is a nice young man like you doing in a neo-conservative think-tank?" "And while you're at it," she said, "what is a 'neo-conservative' and what is a 'think-tank'? What do you do there?" So I said, "Well, a neo-conservative is a liberal who's been mugged by reality, and a think-tank is a place where they pay people to sit and look at the world of practice to see if it will work in theory. That is my charge."

To most Americans, the litany of education failure is now familiar: declining test scores, uncaring and poorly prepared teachers, faltering universities, high schools abandoned to drugs and violence, too few math and science teachers. The list is long and it is dispiriting.

The debate about education performance continues, even though the decline in SAT scores is incontrovertible. Optimists argue that the decline in scores is a consequence of "retention": we keep more students longer, particularly those notorious low-scorers, women and minorities. But figures recently released by ETS (Educational Testing Service) permit

the analyst to side-step this unappealing debate, because they reveal what has happened to the number of high scorers over time. Their numbers have declined dramatically. Between 1972 and 1982 the number of students scoring above 650 on the verbal portion of the SAT fell by 55%, the number of high math scorers fell by 23%. Similarly, the number of students who scored above 750 fell by 47% on the verbal portion, 16% on the math portion.

The most sobering news comes from Japan, the only other country in the world which practices mass education until age eighteen. As American performance declined for two decades, average Japanese IQ increased by nearly ten points. The reason was not heredity or diet but *schools*. Since the Second World War, the Japanese have invested heavily in education and it is paying off.

Is there no good news in America? Not much. But there are good omens and opportunities. Before the nation indulges in wholesale mourning for vanished excellence, it is prudent to sketch in some possibilities for the future.

The most promising news is that research findings about what "works" in education are finally clear, conclusive, and convincing. The early work of James Coleman and Christopher Jencks had led policy analysts and policy makers to conclude that nothing schools did could overcome the effects of race, ethnicity, and socioeconomic status. They were wrong. Recent work by James Coleman and Andrew Greeley in this country, and Michael Rutter in England, demonstrates that schools do make a difference. While hardly a surprising observation to the layman, who has always known that some schools are better than others, research now demonstrates that hard work, high expectations, good teachers, firm administrators, and a disciplined learning environment have effects. In such settings poor and minority youngsters do well, as do middle class students.

If higher reading scores are a priority, we can produce them. (In the jargon of the profession, it is called "time on task.") Homework is a well-established but little-used technique to require more of the students; expecting teachers to know their subject is a straightforward expedient that actually works. Two examples make the point.

First is the new "buzz" word of education: *ethos*. Used by Rutter in his study of inner-city London schools to describe the overall sense of the school — its purpose, its standards, its

commitment to learning — it translates into higher test scores. A principal and teachers who care about what they do — and let their students know it — get more out of them. Social scientists call it the "black box" effect: the school is the black box, the student the raw material, and the school improves them. In the jargon of the human capital economists, the school is "adding value."

School "ethos" is neither code for something pernicious, nor a rhetorical flourish — look at the District of Columbia. Elementary school test scores are finally going up in the nation's capital because the school system has raised its standards. More is required of teachers, and more is required by them. Today, a teacher devotes more hours per week to reading instruction; elementary school children are required to learn 20 new vocabulary words per week; for students with special difficulties, volunteer tutors provide individualized instruction. It is the product of a "high expectation" curriculum initiated by former Superintendent Vincent Reed and implemented by the current Superintendent Floretta McKenzie, and it works.

Second is television. By the time the average student graduates from high school he has spent 12,000 hours in the classroom: in that same time period he has watched 15,000 hours of television. Oddly enough, most research in this field is entirely agnostic: it can find no correlation between television and school performance. And so it concludes that there is no observable effect. (Only in America!) Most high school students report that they do little or no homework — given their heavy television watching schedule it is no wonder. But what is one of the key characteristics of effective schools? They assign homework; the homework must be completed; and the homework is checked by the teacher.

How is it that such obvious points have to be confirmed by research before people believe them? The answer, of course, is that only to professionals must they be. This banal point is important because for years the public had been led to believe that education decisions were best left to experts. But their stock has fallen so low of late that they are no longer listened to. At least not if recent developments in a number of states are to be believed.

The most important is citizen pressure on the public schools, reflecting major changes in attitudes toward schooling. The "me" generation is giving way to the realization that hard work and success are linked in a causal chain; fun and success are

not. For the first time in years the pressure to improve the public schools is coming from the grass roots. No trickle-down reform in the near future, but indignant citizens and taxpayers, at the state and local level, who insist on higher standards.

In the '60's and '70's, while Washington was principally consumed with egalitarian pursuits, thirty-seven state legislatures were enacting minimum competency laws. They were not doing so because schools of education or the NEA asked for them, or the Department of Education endorsed them, but in spite of formidable professional opposition. State legislators, whatever their limits, can only be fooled for so long. Having been told for years that money was essential to improve the schools, they became progressively more quizzical as each round of increased funding was paralleled by declining test scores, increasing disorder, and diminishing public confidence.

As the baby boom passed through the elementary and secondary schools and each cohort of students was doing worse than each preceding cohort, perplexity was replaced with suspicion. Suspicion alone would not have produced state action, but state legislative interest in education was no accident; increasing pressure on the property tax had gradually led to a larger and larger state role in financing education. Throughout the nation's history, education had been a local concern, paid for out of local property taxes. But by 1980 a decisive shift had occurred: for the first time in our history, over half the cost of education was borne by state governments. Whether this reflected or caused the greater interest in education at the state level is not altogether clear, but it did reflect an increased capacity and willingness on the part of state legislators to make demands on the schools.

Ever since President Eisenhower had slipped through the first program of federal spending for elementary and secondary education of modern times (the National Defense Education Act, compliments of Sputnik), various interest groups had been in a state of high anxiety about the loss of local control. Nearly everyone had his eye on the shell labeled Washington. True to form, everyone was greatly surprised to discover that the shell they should have been watching was labeled "state capitol."

The importance of state activism is traceable to a single fact: States are responsible for education, Washington is not. To the surprise of many, local school district responsibility for education is a second-order effect. Local school districts are a

creature of the state, and they exercise their responsibilities as agents of the state, not independent jurisdictions. Taxing authority, the length of the school day, conditions of teacher tenure, the limits of collective bargaining, textbook adoption, and the depth and breadth of the curriculum are state responsibilities. (Even if Washington had the money and desire to improve the nation's schools, it is not at all clear what it might do. Short of creating a ministry of education, with a national curriculum and national examinations, Washington's role can never be much more than exhortatory and incidental.)

The news on the state front is uneven, but promising. In early 1983, Governor Winter of Mississippi pushed through a massive program of school reforms, together with sizable tax increases. Cynics were quick to note that Mississippi had nowhere to go but up; better late than never may be the appropriate retort. In Tennessee, Governor Alexander has made school reform his principal agenda item; so has Governor Graham of Florida. Governor White of Texas tried and failed to increase school funding in 1983 but promises to be back in 1984.

The most dramatic reform in the nation is the North Carolina School for Science and Mathematics. A two-year public boarding school near Durham, it was established by Governor Hunt to encourage excellence in education. Its first graduating class in 1982 had 43 National Merit Scholarship Semifinalists; its second in 1983 had 58; its third, scheduled to graduate in June 1984, has 62.

And wonder of wonders, the California Business Roundtable, a Who's Who of the largest state's power elite, actively backed a school spending increase to improve that state's schools. It even supported higher business taxes, a development that left Sacramento watchers shaking their heads in astonishment.

A less dramatic but no less important source of change in elementary and secondary schooling will be higher education. Higher standards for college and university entry will ripple back into the high school. It will mean more rigorous examinations and more demanding breadth and depth requirements. But this development flies in the face of theory. One would expect the impending enrollment decline in higher education to lead to lower admission standards. So far it has not. To the contrary, colleges and universities are busily raising their

standards. It may be as simple as this: they are ashamed of themselves.

In retrospect, it is clear that the decline in standards marched hand-in-hand with massive enrollment increases, and it may be that declining enrollments will have the effect of running the movie backwards.

The University of California is a case in point. Still viewed by the nation's scholars as America's premier university, it had significantly lowered its standards during the '60's and '70's. A number of explanations have been offered, perhaps none more plausible than former UC President David Saxon's. He argues that the nation's professors became extensions of the draft board; to fail a student was to send him to Vietnam. Together with the youth quake and the general failure of nerve and imagination exhibited by adults of the day it is no wonder that standards did sink. High school students no longer had to exhibit depth and breadth — they could substitute "bachelor living" or "power volleyball" for the Greek Classics in translation, and the "A" earned in the easy course carried as much weight as the "A" earned in the more demanding course. Science and mathematics requirements were eased, and foreign language requirements were dropped. (Lowered admission standards were echoed in lowered graduation requirements. Less was expected of the student at each end.) According to Congressman Paul Simon, in some American institutions of higher education it is possible to earn a Ph.D. and never study a second language.

Today the UC system has again raised its standards, and they look much as they did 25 years ago. A student is expected to be able to read, write and deal with demanding material.

A pragmatic corollary reason helps explain why higher education standards are being raised in the early '80's just as enrollments are beginning to fall. Across the nation, state budgets are tight, and institutions with low standards find it difficult to exert a strong claim on the public purse. Indeed, there is a single common thread in all state reform proposals in 1983. A new *quid pro quo* has emerged: more money in exchange for higher standards.

But the single most important element in the quality education equation is still the teacher. The future of teaching as a vocation and avocation is both the problem and the opportunity.

So long as teaching is an elite enterprise, in which a very few good teachers teach a very few good students, it is possible to rely on selflessness and the desire to serve to attract the best. For example, St. Anselm's Abbey School, located in a black working-class neighborhood in northeast Washington, D.C., has one of the highest rates of Merit Scholar production in the nation. There, Benedictine monks graduate two dozen boys a year — in 1981, eight of them were Merit Scholars. Dedicated teachers and able students are a powerful combination, but they are hardly the rule.

The truth is that Americans have not yet come to terms with the imperative of mass education; in reality, it is a very new phenomenon. Although we have educated little children in elementary school in very large numbers for a very long time, it is only since the Second World War that we have begun to approach mass education in high school.

The numbers tell a dramatic story. In 1920, 16% of the age group graduated from high school. It climbed slowly until the Depression and then grew rapidly, peaking at 49% in 1940 (higher than 1946). It is probably the case that with no work to be had, young people stayed in school for lack of an alternative and the habit stuck. By 1950, 56% graduated; by 1960, 72%; the number peaked in 1970 at 77%; and by the 1980's it began to hold at about 75%.

And it is in high school where the importance of skilled teachers is greatest. Love, kindness, and compassion go a long way in kindergarten, but they will not teach you differential equations, the *Aeneid*, or Advanced Placement Chemistry.

Highly trained teachers, willing to work for relatively low pay, are the consequence of an unusual set of circumstances. For many years, social attitudes and economic circumstances had permitted schools to draw from a unique labor pool. Teaching was one job women could perform that was socially acceptable and economically passable; they were paid less than men, and the infrequent objections to this practice fell on deaf ears. Then came women's liberation: women were no longer consigned to teaching and began to choose other careers. The numbers reveal an extraordinary social and cultural transformation, which is not yet fully understood. In 1955, 331 women earned M.D.'s; in 1980, 3,468 did (the total number of M.D.'s increased from 5,612 to 14,902 in the same period). In law, 244 women earned degrees in 1955; 10,761 did in 1980, nearly one-third of those conferred. (Total degrees awarded rose from 8,209 to 35,667.) Engineering exhibits a similar shift:

in 1955, 177 women earned bachelor's degrees in engineering; by 1980, 7,669 did. (The total increased from 22,445 to 68,818.)

While the absolute size of the pool of prospective teachers remained fairly large, the quality of teachers in training fell, and fell dramatically. Today, prospective teachers are among the least able of all professionals. When performance in fields of study was ranked according to ACT (American College Test) scores, education was 17th out of 19 fields in math aptitude and 14th in English. And while SAT scores have fallen across the board, the decline has been most pronounced among education majors.

The national average SAT scores for all college-bound students who took the test in 1973 was 495 verbal, 481 math, for a total of 976. By 1981, the number had fallen to 426 verbal, 466 math, for a new total of 892, a drop of 84 points in less than a decade. The decline was even more dramatic among education majors. In 1973 their verbal scores were 418 verbal and math scores were 449, for a total of 867. By 1981, those numbers had fallen to 391 verbal, 418 math, for a combined total of 809, a drop of 58 points over only 8 years. Worse yet, according to a recent NIE study, the best of this weak pool are the first to leave teaching.

An even larger and more significant distortion in the labor pool was created by the Great Depression. It produced a virtually unnoticed and unprecedented teacher "bonus" of historic proportions, one we hope never to see again. The economic exigencies of the 1930's tilted many of the more capable members of that generation into teaching, a profession they would not have selected if the economic prospects had been brighter. By the end of World War II, when the economy finally recovered, many of the Depression "bonus" teachers were so firmly entrenched that they stayed; luckily for them (and society at large), they rode a rising tide of growth and expansion, including more money and greater professional opportunity as teaching and administrative positions proliferated. Because administrative work is better paid (and administrators are all former teachers), these positions acted as a magnet to many Depression Era teachers. (The salaries are not all bad. The Superintendent of Chicago's schools, Ruth Love, is paid $120,000 per year.) In addition, a moderate amount of idealism was still at work. President Johnson, himself a former teacher, was fond of saying that there were only three things worth being: a preacher, a teacher, or a politician.

The first large wave of Depression Era teachers began to retire in the late '50's and early '60's, precisely when student scores began their long, downhill slide. The last 22-year-old who began teaching in the last year of the Depression, 1940, retired in June 1983.

While social science methodology is still so primitive that it is not possible to establish definitive proof of a causal relationship between the quality of teachers and student test scores, do not be deceived by this research shortcoming. Rather than abandoning the common sense conclusion that the two are related, abandon social science's pretensions. No proof does not mean no cause and effect, it means the discipline is not sufficiently mature to confirm it.

Knowing what we do about the importance of teaching (if nothing else, its labor intensity and our own experience with individual teachers who have profoundly affected us), the conclusion is inescapable: to improve our schools we must improve our teachers. And therein lies the principal hope of education reform in the '80's. We are entering a period in which we will replace well over half the teaching force in a decade.

Of our existing teaching force of 2.1 million in 1982, the National Center for Education Statistics estimates that we will need nearly 1.5 million new ones by 1990.

The importance of turnover in the teaching force cannot be overemphasized. First, it is almost impossible to improve those teachers already on the payroll. We must take the bad with the good, because when statutory changes in requirements are made, the status quo is covered by all-inclusive "grandfather" clauses. Thus, if smog control devices are required on all new cars, no such requirement is made for cars on the road. Similarly, if new teachers are expected to demonstrate substantive knowledge of their fields, old teachers get away scot free. While not necessarily in the students' interest, there is a sort of rough justice in it: today's teachers entered the profession in good faith, and changing the rules in mid-stream would represent a hardship for those already in the saddle.

Second, there is an old saw about teachers which is true with a vengeance: by virtue of paying the worst what the best are paid (and vice versa), teaching is at once the most over- and under-paid of the professions. The culprit is the synergistic effect of the uniform salary schedule, one of the great reforms of the '50's, and low standards of professional entry. All men and women — good and bad, eager and lethargic, quick and

dull — are paid the same, so long as they are equally senior. On a production line, pay for seniority makes as much sense as anything else. In a profession that demands energy, judgment, and dedication it makes very little sense. But no one has devised a system which will satisfy teachers as it rationalizes teacher compensation.

Thanks to the President, one idea, merit pay, is the subject of heated discussion, but it is chimerical — a wonderful theory, but no one knows how to implement it. As Albert Shanker, the president of the American Federation of Teachers observes, the same people who hired the bad teachers to begin with will now be expected to dole out merit pay increases.

If we look to higher education, two practices offer some guidance. One is a split salary schedule in which scarce disciplines command higher salaries: professors of law, medicine, or engineering, for example. The other is the provision of honors and perquisites: release-time for research or curriculum design, awards of merit for outstanding accomplishment, and designation of special "chairs" for eminent teachers. Reward systems of this kind fit the culture of teaching; merit pay does not, and it is probably futile to pursue it.

The answer to the question of teacher quality then, is found in two places: one is where salaries and teacher qualifications intersect; the other is in the organization of schools. If pay for "merit" cannot be institutionalized, the only alternative is the simultaneous adoption of higher standards *and* higher pay for all teachers.

Teacher standards are determined by licensing requirements. (A license is simply state approval to do something that is otherwise prohibited. It is not too much to assert that in America a teacher is someone who holds a teacher's license.) In most states, it is both a threshold and a ceiling requirement; it has become both the minimum and maximum statement of teacher qualifications. The supply of teachers, then, is set by licensing requirements, their salaries set by demand. Increase teacher standards — and hold to them — and salaries will climb.

Doctors, bricklayers, and embalmers are expert at this, but for some curious reason teachers have never figured it out. The purpose of licensing is to restrict entry into a profession or craft, because it increases status as it bids up salaries. Arbitrarily high standards for professional entry and practice can work to the disadvantage of the consumer as surely as low standards do; but appropriate standards work to the advantage of both

professionals and their clients. This is clearly the most rational solution to the math/science teacher shortage. Higher salaries would attract real mathematicians and scientists to the classroom. In education the traditional approach has been to lower standards by issuing provisional or temporary licenses when shortages occur. Math and science are not the only problem areas. In New Jersey a state-wide shortage of coaches existed in 1983. The solution? The State Board was asked to lower standards, not raise pay.

The second problem is far more delicate politically: it has to do with school organization, the way in which teachers and students are assigned to each other. So long as teachers know more than their students, the possibility of sound education exists. The elimination of tracking — a great egalitarian reform of the '60's and '70's — had two dimensions. Neither teachers nor students were any longer grouped by ability. And the bitterest pill of low teacher standards in the '80's is that many of them are less able than their students. They are also less able than the parents of their students, many of whom are themselves well educated technicians and professionals.

While the evidence for this assertion has long been available, it is not widely discussed, in part because no one wants to turn over this particular rock: its implications are most unsettling. As we have seen, the national average SAT score for college-bound seniors is 426(V) and 466(M), 35 points and 48 points higher, respectively, than the typical education major. An average teacher with an above average student creates an even bigger distortion. At St. Anselm's Abbey School, for example, the *average* SAT score among juniors is nearly 650 for both the math and verbal sections of the SAT. Imagine how those students with a combined SAT of 1300 points would fare with the nation's "average teacher" with an SAT combined score of 809 points.

Perhaps it is because the solution to the problem of teacher quality is obvious that we fail to see it. Teachers and the public both want something for nothing. Low standards for teachers equals low pay; if anyone can do the job, why pay more?

Imagine, for a moment, what would happen if a line were finally drawn in the dust: only trained mathematicians (or poets, or physicists) can teach. No retooled coaches or kindergarten teachers. Real mathematicians. No fooling. After an initial period of uncertainty in order to see if the development

was real, three events would ensue. As real standards were enforced, salaries would climb, status increase, and children would begin to learn again.

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The Public Schools' Response to the Challenge of the Year 2000

Richard C. Wallace
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In addressing the issue of the public school response to the challenge of the year 2000 and how to prepare students for it, I would like to concentrate on three general areas. First, I wish to comment on the state of secondary schools in the nation today. Second, I will identify a few of the current trends that will clearly influence the state of affairs in education in the future. Third, I will cite one school reform proposal and analyze its potential impact with regard to the future of secondary schools in our nation. I will also comment on my own beliefs with regard to education and the educated person. I will address my remarks to specific improvements that must be undertaken if our secondary schools are to meet future challenges, exploring recommendations relating to students, teachers, secondary school curriculum, and schools as social institutions.

One need not look beyond the headlines in local newspapers to recognize the public's negative perception of education in our nation's schools. The Commission on Excellence characterizes our schools as representing "a rising tide of mediocrity," underscoring the title of its report, *A Nation At Risk*. Ernest Boyer's *High School: A Report on Secondary Education in America* identifies more precisely the problems and potential solutions with regard to secondary education in the United States. Many

other reports that will be issued in the coming months will describe in more detail our current educational problems. In some respects, proposals for education in the year 2000 must first address the educational problems of the 1980's.

John Naisbitt's *Megatrends* identifies the direction in which our country is currently heading. Our speakers this morning have elaborated on these and other trends which they perceive to be shaping our society and ultimately our educational system.

Since the previous speakers have dealt with this topic in great detail, I will identify only two trends that have significant educational implication: the information revolution and globalism. We live in an economy and a society that are becoming more completely information-oriented daily. The decline in our capacity to compete with other nations in such basic industries as steel production and automobile manufacturing has been paralleled by the expansion of our information industry. The information revolution of the late 20th century will probably have as much influence on our economic and social lives as the Industrial Revolution of the late 19th and early 20th centuries had on our ancestors. Education's response to the information revolution will center on the processing, storing, retrieval, and use of information for decision-making. The primacy of language skills will be central to our educational response.

The second most potent influence that will shape our economy, social policies, and education is globalism. Technological advances of the past 20 years throughout the world have created conditions that have significantly altered our economy and our perspective on the future. One has only to contemplate the steel industry in the Pittsburgh region to realize the global economy's impact on employment, productivity, and competition. Decisions made about our current and future role as a nation must take on an international perspective. As Naisbitt points out, our prior supremacy as an industrial nation has been outstripped by developing nations that produce higher quality manufactured goods at lower cost. Therefore, we must train our young people to assume a long-range global perspective in dealing with economic, political, and social issues. Specific educational recommendations will be made in subsequent sections.

As I reflect upon the condition of our public schools, our society, and the directions in which our culture seems to be

moving, I conclude that we must clarify our beliefs about the purposes of education. More important, we need to ask ourselves, "What is an educated person?" Then we need to ask, "How do we prepare young people to become educated in the future?"

From my perspective, education is a process that provides one with the intellectual and interpersonal skills that enable one to interact productively with his or her environment. Implicit in that definition is that a person must have a command of the ability to perceive, analyze, and interpret information coming from the environment from a variety of sources. For education to develop productively, a learner must acquire the skills of learning and must develop the habits and attitudes of a life-long learner. While engaged in that process, the learner must be exposed to the experience of mankind in its most elegant forms.

In *The Idea of a University*, John Henry Newman describes the educated person as the person of "philosophic habit:" one who delights in perceiving relationships among phenomena that he or she encounters in life. The person who can read, think, write, listen, and speak critically, who can reflect upon his experience and relate it to other aspects of his life experience — this is an educated person. The educated person is aware of the contributions of prior generations to the current state of affairs. The educated person has the skills to engage the present and the future productively and make meaning out of life and experience. These core values form the basis for education for the year 2000 as well as for today.

Given the nature of society as presented by the previous speakers, I would like to consider schooling of the future by first talking about students, teachers, and curriculum, and about school organization itself.

If students are to participate effectively in the future world, then we need to ensure, perhaps more than ever before, that they have a command of the fundamentals of information-processing. That is, they must be able to read, speak, think, and write clearly, efficiently, and effectively. They must be able to respond critically to their experiences at school and at work, and in their personal lives. Among the skills that students must acquire to cope effectively with the future are problem-solving skills, both generic and specific. By generic problem-solving skills, I mean the ability to identify and define a problem; to gather data that is relevant to that problem; to generate

hypotheses and alternative solutions; to gather and process information related to that problem; to make conclusions and recommendations based on analysis of the information. In addition, students must be able to make inferences beyond what they have encountered and identify potential future areas of inquiry. These generic skills of problem-solving will be acquired when students are engaged in inquiry in all academic areas. The problem-solving skills developed in the science laboratory, while somewhat different from those developed in the social science laboratory, will nevertheless have general applicability.

It is important that students also learn to use their inquiry skills in their personal relationships. They should be able to analyze problems they encounter in their lives as students, in and out of the classroom, and in their interactions with adults in the larger society. If people are to be prepared effectively for the future, they must be prepared to think and solve problems. A related skill is the ability to make decisions. As students try to cope with the information explosion in the present and the future, they will have to be able to discriminate between relevant and irrelevant information. They must be able to take the enormous amount of information that is available to them and reduce it to useful forms. They must be able to make decisions based on that information and to develop alternatives to their decisions. In large measure, these functions stem from critical reading and thinking skills.

Related to the development of these skills is the promotion of the habits of life-long learning. To prepare young people for the future is to prepare them to continue their education far beyond the days of formal schooling.

As the various reports on secondary education show clearly, secondary schools as currently viewed are joyless institutions where students remain virtually unknown by the vast number of adults. Schools are being described as joyless because of the drab, repetitive, didactic instruction that tends to monopolize them. If we are to engage students more productively in the educational process and to ensure that they become more fully educated in the future, then we must pay attention to a variety of instructional methods. This means that we must prepare teachers, in both undergraduate and in-service training, to use a variety of teaching styles, even within the didactic mode. Mortimer Adler, in his *Paideia Proposal*, speaks of three types of instruction: didactic instruction, directed toward the acquisi-

tion of organized bodies of knowledge; coaching, directed toward the development of intellectual skills including critical thinking; and Socratic questioning, directed toward enlarging the students' understanding of ideas and values. One typically encounters only didactic instruction in most secondary schools. Oftentimes, it is stereotyped, ineffective, and inefficient. It has been said of this that teachers often confuse talking with teaching and learning. At its best, the old notion of "I know, I will tell you, and therefore you will know" does not work effectively with most secondary students. The adolescent student is a restless individual who must be engaged productively with exciting ideas, materials, and methods of instruction to make him an active participant in the learning process.

Adler's notion of coaching is foreign to most secondary teachers today. Indeed, the most effective form of coaching in our high schools typically occurs on the athletic field or court. The coaches tend to be among the more effective teachers in our schools, because they analyze very carefully the strengths and weaknesses of their players and then organize practices to promote development of necessary skills. Ultimately, coaches must coordinate all players on a team to complement one another in achieving team performance. When Adler speaks of academic coaching, he means that teachers must have a very clear notion of what they are attempting to achieve with students. Every teacher must have a "game plan" with respect to the skills and knowledge that he or she expects students to acquire. It further means that teachers must carefully diagnose the current knowledge and skills demonstrated by each student. Following the diagnosis, the teachers need to prescribe practice that will ensure that the student acquires the basic knowledge or skill required. Finally, the teacher-coaches must coordinate all of the individual's relative knowledge and skills to direct him toward fulfilling his educational goals. This concept of coaching — requiring adequate diagnosis, a clear game plan, and directed practice — is not generally found in the secondary schools of the nation. Therefore, the task of developing teachers as coaches in teacher-training institutions and school districts across the country is an enormous one. This does not mean that the job cannot be done; however, it means that we must take responsibility to see that this goal is achieved.

Secondary teachers also need to develop the ability to write, to critique writing effectively, and to require students to write more effectively than has been done in the past. Ernest Boyer advocates making the development of language facility the

primary goal of secondary schooling — namely, the ability to speak, read, write, and listen effectively. If this is to be achieved in the secondary schools of the nation, then we must do a better job of preparing English teachers to write themselves and to be able to teach writing to students. Of equal importance is the need to train teachers in other academic disciplines to write effectively and to analyze their students' writing. It means that the conventional multiple-choice tests often used in social studies and science classes must be replaced in part with student essays.

Another goal that we must achieve with our secondary school teachers is to develop a more hospitable environment for today's adolescent. One of the most startling and dramatic findings of many of the studies on secondary schooling relates to student perceptions of adults in their environment. All the data tend to communicate the same result. Virtually two-thirds to three-fourths of all high school students across the nation feel that they are not known or cared for by any adult in the school environment. The data tend to indicate that three groups of students are well-known: the athletes, the high achievers and student leaders, and the trouble-makers. All members of these three groups tend to be well-known to faculty and administrators. The vast majority of students, however, are unknown. They may be good students, but not outstanding. They may be good school citizens, but not leaders. They tend to be "average" students. Because of the nature of secondary school organization, teachers typically do not have the time — or take the time — to get to know these students. Not even guidance counselors, who are charged with this responsibility, really get to know their students; this latter phenomenon may be a function of the number of students who are assigned to a counselor. Personally, I think it is because the counselors are not prepared to get to know students individually. I find in my experience that the role of the guidance counselor in the secondary school is often both misunderstood and misapplied. It is my strong belief that through a variety of group counseling techniques and individual counseling sessions, counselors can get to know a significant number of students in any secondary school. Unquestionably, we must find the time and the ways for secondary school teachers and counselors to get to know students.

There is no question that the information society is upon us. Every secondary school student should be computer literate. By that I mean that every secondary school student should

know how to put information into a computer and how to get it out. I do not believe that every student needs to become a computer programmer, but there must be more extensive use of computers for computer-assisted instruction in the schools, as well as for information-processing and analysis.

The world has become smaller through advances in transportation. As we currently find ourselves in a global economy, there is no question that the curriculum of the future must involve thorough study of world geography and of at least one foreign language. Too often we find that secondary students at all levels of ability are virtually ignorant of Western European, North American, and South American geography, not to mention Asian geography. I speak of geographic knowledge as not just knowledge of physical geography, which is very important, but also knowledge of political, economic, and cultural geography. These aspects must become subjects of study as they relate to our global economy. The broad concept of globalism as it relates to the Earth's total environment must be of concern to future educators.

Mortimer Adler's *Paideia Proposal*, as it relates to enlarging the understanding of ideas and values, is worthy of significant attention. Adler identifies Socratic questioning as the key to enlarging values, ideas, and skills. But equally important, in his estimation, is the use of high quality materials for students to study — that is, the "classics" of our culture. Programs like the traditional "Great Books" curriculum used in some colleges and universities, in which students deal with the most important ideas and values of our culture, must become part of the curriculum of the secondary schools. One of the major findings emerging from the recent studies of secondary schools is that the quality of instructional materials is poor at best. The studies indicate that instructional materials have been "watered down" and "pre-digested," and that their readability level has been lowered. If we are to engage students in more effective education at the secondary level, we need to pay serious attention to providing higher quality instructional materials for students.

There is no question that we must increase the demands and standards for students in mathematics and science if we are to compete with other developed nations and developing nations of the world. Not much more needs to be said in addressing this issue.

Many of the recent studies of schools generally indicate that we need a longer school day and a longer school year. I sub-

scribe to these notions. When one compares the length of the school day and the school year with other developed countries, the American schools clearly do not measure up. Perhaps of equal concern, however, should be ensuring that the time we now use is well spent. There is a significant amount of research at various levels of schooling which indicates that engaged instructional time is significantly lower than the actual amount of time the students spend in the schools. There is a lot of wasted time. Perhaps we should start our improvement efforts with making sure that we use the currently available time to its fullest.

There is no question that the standards for students need to be raised in virtually every area of the school curriculum. Our entire culture has suffered as we have allowed our standards to slip over the past 20 years. We now need to pull ourselves up by the bootstraps and increase the demands upon the students and ourselves with regard to academic standards.

If we are going to achieve the goals that are implicit in many of the proposals that I have put forth in this paper, then schools have to be more flexibly organized. Many of the studies of secondary schools endorse that need. We must find more time to engage students productively. The conventional 50-minute period segmented across the secondary school experiences of youngsters just will not allow us the flexibility to achieve all of the goals that are proposed in the secondary school reform movement. Adler's proposal calls for extended periods for idea enlargement.

We need to engage volunteers in the schools in ways that have not been done in the past. Throughout the remainder of this century, we will have many more people retiring early than has been the case in our nation's history. Many of these retired people have much to give to current and future generations. We need to prepare teachers and administrators to open the doors of their schools and use this tremendous resource more fully than we have been doing. If we are to fulfill the goal of coaching students in intellectual skill development, we will need many more hands than we currently have available to us. The public schools cannot be expected to provide the low pupil-teacher ratio that is necessary to achieve the goals of coaching. In order to do this, we must find volunteers who can spend time with our young people and help them to develop and acquire skills. At the same time, these adult volunteers can express a genuine personal concern for the young people with

whom they work. Pittsburgh's "Generations Together" program is one prime example of what can be done to engage the adult volunteer community productively in the schools. The benefits are two-fold: students benefit directly from their interaction with adults in the acquisition of skills, and retired people can often gain a new sense of meaning in their lives. Thus we can begin to achieve simultaneously the goal of increasing the educational confidence of students while utilizing a low-cost cadre of people who benefit not only themselves but also the schools. Both adults and youth develop caring attitudes toward one another that enrich their lives.

I believe that the state of affairs we have heard about and discussed today with regard to public schooling and our nation's future provides an opportunity for us to reexamine the fundamentals of schooling. As we have examined what the year 2000 will bring, we realize that we must overcome the present ineffectiveness of the secondary schools. We must stress the development of the intellectual skills of problem-solving; we must engage young people in the application of the enduring ideas and values of our culture to modern-day problems. In this presentation I expressed the view that the educated person is one who has developed a philosophic habit and who is also a problem-seeker, a problem-solver, and a life-long learner. Finally, I identified some needed changes that must occur among our students and teachers and in curriculum and school organization if we are to meet the challenges of the present and future. I would encourage all members of the audience to read Ernest Boyer's *High School*, Mortimer Adler's *The Paideia Proposal*, and John Naisbitt's *Megatrends* to gain a perspective on needs of education in the year 2000.

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The Response of Private Education

Gardner P. Dunnan
President, The Dalton School

It's a real honor for me to share with you in this Centennial celebration of Shady Side Academy. I couldn't help thinking, as I suspect many of you did when Mr. Doyle asked us to imagine excellence in education at the end of his remarks, that he was describing Shady Side Academy today. In that fact you should take real pleasure, because I know, and hope that you do, that Shady Side is a beacon that illuminates the way to excellence in education — not only here in Pittsburgh but indeed to those of us in New York and California. For that reason, it is a true privilege for us out-of-towners to join you in this momentous occasion.

On the other hand, I can't be as tranquil as Mr. Crecine was, who convinced me that it's very easy to predict in science and technology what the future will bring. Personally, I am a little more intimidated by the task of talking about the implications of the future for independent education. In fact, I thought of Mr. Williams' reference to George Orwell and the trouble that Mr. Orwell had in 1948 of predicting what would be happening in 1984. Last night, I had a dream in which Mr. Orwell appeared. As he approached me from behind his tombstone, he made me think of my audacity in talking about the future. Because

Mr. Orwell's tombstone had that favorite New England epitaph on it — you probably know it:

Take heed my friend
As you pass by —
As you are now
So once was I.

As I am now
So soon you'll be;
Prepare yourself
To follow me.

The message is that we must be a bit modest in the softer fields of education in making our predictions. Having said that, I'd like to make three general comments about independent education and the points that we've heard today.

The first I have to relate to Mr. Crecine's remark that society will become more and more fragmented with the new technology. It's hard for us to imagine a more fragmented society on a day when we must arise to learn of violence all over this globe. But indeed I think that it is correct that our society is increasingly suffering forces of fragmentation and isolation that we must resist. And when we look at that, it is important to recognize that education heretofore has been infinitely more successful in training students in the skills of competition rather than in the skills of cooperation and collaboration. Those skills of competition, which we all share and find enjoyable, are of course going to continue to be necessary. But no field of endeavor — be it politics, government, services, technology — no field features the solitary innovator anymore. It features the team. It features the cooperator. And unfortunately, our educational systems — public and private — have been designed to focus only on the individual and the competition, and have done an inadequate job so far in training students how to work together — how to understand one another, how collectively to solve problems that are far too great for any one of us to solve. So our first implication has to be that concern with cooperative skills rather than the competitive skills.

A second implication for independent education is that our classrooms are going to explode. As Ms. Bird told us about the workplace, the individual classroom is no longer going to be

the only place or even the major place of learning. Indeed, terminals will appear in homes, and just as workers may stay at home, so, too, may students. Indeed, students often know more than teachers — not in any way to be derogatory about the knowledge of teachers, but because all adults are struggling to deal with the technological revolution that our students handle so well.

Related to that classroom explosion is the point that Mr. Williams made, that we must make a transition from a national to a world economy. It's ironic — in a day that we are looking at televised color images of exploded buildings before they have even finished repairing those buildings and taking out the injured — it's ironic that even in this conference today we have talked in such an ethnocentric and such a nationalistic way. When we say that the problems of the world and the problems of food supply can be solved, we're totally neglecting the reality that this winter there will be thousands and thousands of people starving to death on this globe. There will be a greater famine in Africa than this world has ever seen. We have *not* solved the problems of production, and we must recognize that if we begin to think that this is a *global* experience, not a national experience. Education must take leadership in this kind of global recognition, for indeed a nationalistic approach is as disastrous for us educationally as it is in terms of trade or manufacturing.

The third point that I would like to make in terms of implications for education is a bit humorous when I think about making it in this particular setting. You know, the mode in which we are grappling with the issue of the future is much like the very mode that our forebears could have used a hundred years ago. Here we are, talking to one another, much as we could have a hundred years ago. It's a little bit easier, in that we have some electrical equipment helping us, but basically it's the same kind of interaction.

I'd like to break out of that mode a little bit for you and cite some research not from the field of education. Before I do that, I have to say that Mr. Doyle's research references, which were very potent and relevant, nevertheless reminded me of the definition of research which divides all research into two categories: that which confirms your firmly held biases, and that which has serious methodological flaws. Now, to take us a little bit beyond the technology of a hundred years ago in this presentation, I want, as your final speaker this morning, to use

an audio-visual aid. I want to hold up a book! See how we've progressed from the simple speech?! The book is *In Search of Excellence: Lessons from America's Best Run Companies*. It happens to be one of those collections of research that confirms my biases, and therefore I recommend it to you as containing wisdom. It was based on the study of a large number of American corporations that was designed to extract the qualities of corporate management and corporate structure that led to the most success in those corporations. And I believe firmly that the principles that they identified were the same principles that will make a school a successful organization, or make a teacher in a classroom successful. I'd like to talk to you about that for just a minute.

First of all, the book begins by pointing out that American corporations too often are in difficulty and too often are failing in their competition with people like the Japanese because we have been seduced by the power of the technology and the rational approach to problem-solving. Our business schools have led us into a kind of quantitative analysis that totally neglects what we know about human nature. In the successful corporations, we've now learned something that can be found in a good independent school, or indeed in any good organization. That is, that in addition to looking at the numbers and coming up with carefully designed solutions to problems, we have to look at the people involved. And when you look at people, you find in each one of us some interesting, conflicting, basic human needs.

The first need is to feel that you are part of something greater than yourself — to feel that you have a mission, that what you do counts, that what you do lives on beyond your own short and dangerous life. Indeed, an independent school has the capacity to develop in students, in parents, in faculty, that sense of being a part of something greater. But there is a conflicting need that seems to make it difficult to give that sense of group, that sense of belonging, and that's the need for *individual* excellence, to stand out from the crowd, to feel that you are different and worthy of the special attention that we all yearn for. A good organization — be it an independent school, a great city public school system, or a major corporation — is an organization that manages to recognize these conflicting needs — to be a member of something greater than oneself and to stand out and be an individual — and by

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recognizing those needs, can meet them in the way problems are solved and the organization is put together.

The book goes on to identify eight principles that translate into effective organization. I just want to mention three of them that I think have something to do with independent schools. The first is a bias for action. Studies are important and worthy of our careful attention, but good things happen if one takes action. And while studies are taking place and we must be attentive to them, every day there are children in classrooms who must be served, and we cannot wait for every bit of research to be done. We have to take the best steps that we can. It reminds me of the quotation, "I do not know if things will get better if they change; I *do* know that they *cannot* get better without change." So let us not be immobilized by our concerns with research, but rather take the best research we have at a given point in time and take what is, in our best judgment, the correct action. That is the way we will bring about improvement.

A second principle is called "close to the customer" in the corporate model, but I think that has a lot to do with schools. I think it has to do with the classroom teacher who's close to his or her "client," the student, by really diagnosing that student's strengths and weaknesses, interests and fears, and from that diagnosis, prescribing an authentically individualized program that meets the needs of that student. So, too, can independent schools be "close to the customer" by recognizing the needs of faculty and parents and families. But in every way, that principle of "close to the customer" is essential.

And third is the concept of simultaneous "loose-tight" properties. That one's a little harder to understand, but by that the authors mean that there has to be a passionate commitment to the core values of the corporation or the school. There has to be total dedication to achieving the overriding purposes of an institution. At the same time, there has to be an encouragement and nurturing, a stimulation of the kind of organized chaos that allows each person — each student in the classroom, each teacher in his or her professional role — to be creative, independent, autonomous to the degree possible. And it's the balancing of those two opposites — of the closeness and seriousness of purpose that a school must have, and the looseness and flexibility — that is essential to bring about real excellence.

Let me conclude with one remark about the relationship between public and private education, because actually my

intended career was in public education, and it is only through serendipity that I find myself in an independent school. I have found that just as education as an enterprise is far more similar to corporations than it is different from them, so too is independent education far more similar to public education than most of us in independent education generally acknowledge. There are good people in the public schools doing an excellent job with the same motivations and talents that we have in our best moments, and there are bad people in both sectors who have less skill and less commitment than we would desire. Indeed, if there is a role for independent schools in this country, it is to be that beacon to show the way to excellence — to take advantage of the privilege we have through the luxury of the students and the faculty that we work with, to model the best kinds of programs that then can be quickly picked up by public education to serve the majority of the students.

One of the unique features I have learned in a visceral sense about an independent school is that we are here, all of us, by *choice* — students, parents, and faculty. And that free choice, freely exercised, makes us much more easily able to make the kind of commitment I was speaking of earlier. I think this principle of choice can be introduced into the public sector. I can't speak of Pittsburgh, but in New York City, in the next 12 months, there are 27 elementary schools that will be closed through declining enrollment. Those decisions as to which schools get closed right now will tend to be made by *quid pro quo*-ing, by political influences, and by factors that don't have a whole lot to do with the quality of what happens in that system. I would propose this within any public school system: to introduce the concept of students choosing the school that they attend, and therefore having a commitment to that school, and to build in the faculty a commitment to being attractive to those students. We could, with that one move, introduce one of the most powerful elements that we enjoy in independent education. It's not terribly simple, and I present it in a simplistic fashion, but I think that it is worthy of our consideration.

Thank you very much.

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Discussion

QUESTION: Dr. Wallace, what, specifically, are the Pittsburgh Schools doing to encourage thinking and to encourage good teaching?

WALLACE: First of all, I'm very pleased to say that we had 28 National Merit Semi-Finalists in the Pittsburgh Public Schools, 20 of whom came from one high school, Taylor Allderdice High School. Peabody High School and some of the other high schools had some as well.

The major job that I've taken on in the last three years has been to raise the basic skills achievement in the young people in the City. We've done that at the elementary and middle school levels, where we now reach or exceed the national norms at all grade levels in virtually all schools in the district. We've just begun to work at the secondary level.

Beyond basic skills acquisition, which allows one to become educated, far more important in my mind is the development of critical thinking in students. We have a program called M.A.P. Critical Thinking, which is now in it second year of pilot testing in Grades 3, 5, 8, and 11, and will be implemented in all schools at all grade levels next year in the field of social studies. Essentially what we're doing is training students to

speak and write on a topic; we expect them to communicate a topic statement clearly; we expect them to support that topic statement in the development of a response with evidence; we expect them to come to a conclusion that is based on and flows from the evidence; we will rate them on the overall impact. We're doing this beginning in the primary grades. And so there's a very deliberate attempt to foster those kinds of critical thinking, critical speaking, critical writing skills that, from my point of view, are the core of the educational process and the hallmark of the educated person.

Also, our Centers for Advanced Study, which are designed for secondary gifted students, opened in September, and I think that they are going to be exciting in terms of what they do for students. We're going to get them out of the schools when they're juniors and seniors and get them to work with scientists and people in the academic and business worlds in mentorship kinds of relations. I think that this is going to be very important in carrying the world of schooling into the world of work.

With respect to teachers, we opened in September the Schenley High School Teachers' Center, which is designed to upgrade the quality of teaching in the district's secondary schools. Each of our 900 teachers will go through an eight-week training experience, a "revitalization" experience, over the next four years. We've just completed training a cadre of what we call our "replacement teachers"; they will now go out into the secondary schools next Monday, and a new group of 50 teachers will come in and spend eight weeks in the Schenley High School Teachers' Center. They'll spend part of that time observing master teachers in action. We have restaffed Schenley High School with the most able teachers in the district. The visiting teachers will spend about a third of their time observing good teaching, analyzing that instruction, identifying why it is good. Then they will work with the clinical resident teachers, as we call them, planning instruction themselves, teaching for that master teacher, and engaging in the dialogue. The intention is to raise the level of dialogue about instruction.

Second, they'll be engaged in a variety of activities designed to make sure that they are updated in the content area field — that is, they know what is happening in their field, both from a content point of view and in terms of any research that may have been conducted in the past decade that tells them something about the teaching of math or science or social science.

And finally, and from my point of view most important, one-third of the experience is spent studying today's adolescent.

What are the kinds of forces that are driving young people today? What kinds of influences do they bring into the school setting? And what is it that we must do with youngsters and for youngsters to reach out to them, to communicate that we care, and to communicate that we are interested in them, and most important, to ensure that they learn?

QUESTION: Mr. Doyle, how do we resolve the demands for — and the tension between — the striving for *equity* in the public schools and for *excellence* in the private schools? What good can come of this? How can we help each other?

DOYLE: The danger is in the "new class" phenomenon, as it was aptly captured by Mr. Berrisford earlier: the high-powered professionals, husband and wife or paired man and woman who together have children and have the resources to take advantage of first-rate education. If it is not provided in the public sector, they will purchase it in the private sector. That new class phenomenon is genuinely new, I think, and the numbers are really quite striking. At the other end of the scale are the growing numbers of the lower classes who are increasingly in distress. In the city of Washington, where I live, about 65% of the live births are illegitimate births, and half of those in turn are to young *children* having children — girls under 15.

So we see two trend lines, a spontaneous set of social divisions beginning to occur. And if private schools become the only place where kids can get a good education, then the meritocracy of the new class will take advantage of that and fill them up. The evidence in that regard is, I think, overwhelming. Already in the decade 1970-1980, non-Catholic private school enrollments increased by 97%. They almost doubled. Now these numbers are almost never talked about. No one cares to do any research on private schools, so no one thinks about it. In part it's an artifact of the way the numbers are collected. Private school data historically have been aggregated so that as Catholic school enrollments declined by 1,300,000, no one noticed that other, non-Catholic private school enrollments were increasing by 1,000,000 kids, because the net loss was still 300,000 over that decade.

Since I'm an eternal optimist, my notion is that two things will happen. One is that the public schools have the wit, the organizational capacity, the energy to respond. And I think the comments about the Pittsburgh schools are very much to that point. I was very edified and encouraged to hear what Dr.

Wallace had to say, and I see that in city after city around the country. Secondly, I think that the old isolation of the poor from the private sector will eventually end. I think that we will get either tax credits or, more likely, education vouchers for low-income families in one state or several states, and will then bring private education into reach for a large segment of the population which has no opportunity to avail itself of it. I think that will have a salutary effect on both private and public schools.

The bellwether for this is the Assistant Majority Leader in the Minnesota State Legislature, a liberal Democrat, John Brandl, who is carrying such legislation today. It has been endorsed by civil rights groups; it has been endorsed by liberals in Minnesota, although not overwhelmingly. His is simply a means-tested voucher scheme for low-income families in which the state funds would be made available for them to attend any school they care to attend, public or private, any place in the state of Minnesota. That holds out the possibility of cross-district transfers, of inter-district transfers; it holds out the possibility of movement from the public sector to the private sector. I think a system which was opened up in that way would be enormously helpful and would also tend to ameliorate the dangers of the social class divisiveness which I see on the horizon otherwise.

BERRISFORD: There's no way you can summarize all the wisdom that you've heard here today. An article was in *The New Republic* for October 17, 1983, which was, I gather, a reprint of a talk given by Anthony Quinton, the President of Trinity College, Oxford, when he was at Columbia as visiting professor last year. In it he suggests that part of our problem in the field of education today is that substantive issues have taken over and we're not considering the procedural as much as we might. He refers back to the Victorian concepts of will and character as having an important place in the education of individuals. He points out that those two human attributes are not acquired through substantive learning. They are acquired through example and through great personal effort and application. And underlying all that you've heard today, there must be a sense that all of us — whether we are adults or students — are going to need those characteristics if we are to be able to take advantage of whatever opportunities the future provides for us. I happen to be one of those who is optimistic about the future, provided that we have the determination to handle its problems.

Gardner Dunnan spoke for me, too, when he talked about the privilege he felt in being here on this occasion. I take back with me a great sense of commitment to high standards and to values — and I must say, too, warmth and friendship and good feeling. I can't conclude without saying how grateful I am for this opportunity and how grateful I am to the other people on this panel for the wisdom that they have brought to all of us today. Thank you very much.

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